REMARKS

Claim Rejections – 35 U.S.C. 112

The Examiner has rejected claim 10 under 35 U.S.C. 112, 2nd paragraph, because the term "substantially" is broad. The Examiner contends that it renders the claim indefinite in that it fails to point out what is included or excluded by the claim language and suggests, for purposes of prior art rejection in this Office Action, "substantially" in claim 10 will be omitted.

Although Applicants respectfully contend that they do not agree that "substantially" is broad so as to render the claim indefinite and that it fails to point out what is included or excluded by the claim language, Applicants acquiesce for purposes of applying the prior art by the Examiner to omit "substantially" in claim 10.

The Examiner has rejected claim 15 under 35 U.S.C. 112 which recites the limitation "the random access mode" in lines 1-2. The Examiner contends there is insufficient antecedent basis for this limitation in the claim and for purposes of the prior art rejection in this Office Action, "the random access mode" in claim 15 will be construed as "the random assignment mode" specified in claim 12.

Applicants have studied the Examiner's rejection and acquiesce in same and have accordingly amended claims 15 and 17 which previously set out "random access mode" to now read "random assignment mode" as suggested by the Examiner.

Double Patenting

The Examiner has rejected claims 1-3 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-5 and 8-9 of U. S. Patent No. 6,400,696. The Examiner takes the position that the conflicting claims, although they are not identical, they are not patentably distinct from each other because they recite means or steps that are substantially the same and that would have been obvious to one of ordinary skill in the art.

Applicants respectfully submit that although Hreha, the sole inventor in '696, is also a co-inventor in the instant application, this does not in and of itself render claims which are not identical obvious under the doctrine of obviousness-type double patenting as contended by the Examiner. Applicants respectfully submit that in claim 1 of the instant claims an Internet protocol network is defined that requires a classifier for identifying specific type of messages in element 1 of said claim, which is no where to be found in claim 1 of the '696 patent. Furthermore, Applicants respectfully contend that in the second element of claim 1 of the instant application there is a dynamic assignment/multiple access

(DAMA) communication protocol for transmitting data over the system, whereas in claim 1 of the '696 patent the non-asynchronous transfer mode protocol, which is not to be found in any of the claims of the instant invention, is overlaid with one or more dynamic assignment/multiple access communication protocols. Applicants respectfully submit that claim 2 likewise is not subject to the judicial doctrine of obviousness-type double patenting since it contains all of the limitations including those recited above with regard to claim 1 that patentably distinguish over all of claims 1, 3-5 and 8-9 of the '696 patent and are non-obvious thereover for the reasons set out above. Furthermore, although claim 2 of the instant application requires a satellite that is non-processing, this is to be distinguished from claim 3 of the instant application under the doctrine of claim differentiation which specifically calls out that the non-processing satellite implements a bent pipe communication link and is further not responsive to the judicial doctrine on this basis. Applicants respectfully submit that claim 3 is likewise not rejectable under the doctrine of obviousness-type double patenting over claims 1, 3-5 and 8-9 of the '696 patent since it contains all of the limitations of claim 1 which have been shown to be patentably distinguishable over the '696 patent and non-obvious thereover.

Applicants respectfully submit that for the above recited reasons claims 1-3 are not properly rejectable under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-5 and 8-9 of U. S. Patent No. 6,400,696 and respectfully request that this rejection be withdrawn.

Claim Rejections

The Examiner has rejected claims 1-2, 4-8 and 10-18 under 35 U.S.C. 103(a) as being unpatentable over Awadallah et al U. S. 6,449,251 in view of Connors U. S. 6,449,267. The Examiner states that Awadallah teaches the invention as claimed including dynamic resource allocation architecture for differentiated services over broadband communication networks.

As to claim 1, the Examiner contends that Awadallah teaches a system that comprises a gateway that interfaces to an Internet provider or corporate network, a local area network edge device, and one or more personal computers coupled by way of a network to the local area network edge device, a dynamic resource allocation system that supports differentiated services with different levels of priority, comprising:

An Internet protocol network that comprises (Fig. 1);

A classifier for identifying specific types of messages (Fig. 2);

However, Awadallah fails to teach a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system.

The Examiner contends, however, that Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. According to the Examiner, Connors teaches a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system (col. 2, lines 38-47, Connors discloses Fig. 1....a communication system using a demand assignment multiple access (DAMA) protocol...DAMA based MAC protocols comprise two primary elements: (1) a bandwidth request mechanism and (2) a mechanism for coordinating transmission).

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors so that a dynamic assignment/multiple access (DAMA) is provided to coordinate a transmission of data over the system. One would have been motivated to do so to allow the DAMA channel buffer to accept the input data received at the first node, according to the Examiner.

Applicants respectfully submit that in Awadallah '251 there is disclosed "A packet mapper prioritizes streams of data packets in a computer network, each data packet having a packet header containing feature values descriptive of the data packet. The packet mapper includes a mapping table that associates application-related features with network-reserved feature values from a range of feature values reserved for use by selected network data packet streams, and a feature value mapper that performs at least one of (i) in each packet header having an application-related feature value associated with a network-reserved feature value, substituting the associated network-reserved feature value for the application-related feature value, and (ii) in each packet header having a network-reserved feature value associated with an application-related feature value, substituting the associated application-related feature value for the network-reserved feature value."

Applicants respectfully submit that, although in Fig. 1 protocol is mentioned in the table, the figure presents a system which is totally non-analogous to that as set out in claim 1 of the instant invention for the following reasons:

The system does not suggest, disclose or imply a gateway that interfaces to an Internet Service Provider or corporate network, a local area network edge device; a satellite that provides a communication link between the gateway, a local area network edge device and a dynamic resource allocation system as admitted by the Examiner.

Furthermore, Applicants respectfully submit that it is not at all apparent in Fig. 2 of the '251 patent that a classifier for identifying specific type of messages as required in at least claim 1 of the instant invention is anywhere taught, suggested or implied by the figure and, furthermore, in the text of the '251 patent at col. 6, lines 22 et seq. it is stated "The Packet Classifier 206 intercepts all packets flowing between the IP stack 202 and either of the network interfaces, LAN Interface 212 or WAN Interface 213. If a packet belongs to a

"protocol of interest, then it is processed further by Packet Decoder 207 or by the Proxy Table Manager 208 for appropriate port swap." Applicants respectfully contend that in what is otherwise a very specific recitation of the packet classifier as employed in the '251 patent, there is no where to be found a classifier for identifying specific type of messages as required in claim 1 of the instant invention, in combination with all of the other elements stated above with regard to distinctions drawn over Fig. 1 relied upon by the Examiner which are hereby respectfully incorporated by reference.

Applicants respectfully submit that Connors '267 is directed to "A method, apparatus, article of manufacture, and a memory structure for communicating data from a first node to a second node....The method comprises the steps of receiving input data at the first node, transmitting a resource request having a resource metric from the first node to an allocating agent, receiving an allocation of resource units according to the resource metric, the resource units comprising at least one DAMA channel resource metric and at least one RA channel resource unit, queuing the input data into the DAMA channel buffer, dequeuing input data from the DAMA channel buffer into the RA channel buffer according to a comparison between a predicted transmission delay and a delay threshold, and transmitting the dequeued input data in the RA channel buffer via the RA resource units. The article of manufacture comprises a data storage device tangibly embodying instructions to perform the method steps described above. The apparatus comprises a receiver for receiving input data, a DAMA channel buffer for accepting the input data, a resource unit request module, operatively coupled to the transmitter and the receiver, the resource unit request module for generating a resource request metric when indicated by an information rate of the input data, and for receiving an allocation of resource units via the receiver, and a channel selection module, for dequeuing input data from the DAMA channel buffer to an RA channel buffer according to a predicted channel delay and a delay threshold."

Applicants respectfully submit that in essence, as seen in the specification and the claims of the '267 patent, there is taught a receiver for receiving input data, a demand assigned multiple access (DAMA) channel buffer for accepting the input data, a resource unit request module which is coupled to a transmitter and a receiver so that the resource unit request module generates a resource request metric for receiving an allocation of resource units via the receiver and a channel selection module for dequeuing the input data from the DAMA channel buffer to a random access channel according to a comparison between a predicted channel delay and a delay threshold. The primary system and concern of the '267 patent is as seen in col. 4, lines 36 et seq. "There is therefore a need for a medium access control protocol that allows transmission of information with minimal

"delay, while simultaneously maximizing resource unit utilization. The present invention satisfies that need."

Applicants respectfully submit Connors '267, aside from the use of a satellite and a demand assigned multiple access (DAMA), is completely non-analogous and neither teaches, suggests or implies the system as defined in claim 1 of the instant claims. Connors '267 does not employ a gateway that interfaces to an Internet Service Provider or corporate network; a local area network edge device; a satellite that provides a communication link between the gateway and the local area network edge device; or a dynamic resource allocation system as opposed to a demand resource allocation system that comprises an Internet protocol network comprising a classifier for identifying specific type of messages and a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system. Applicants respectfully submit that Connors is therefore seen to do very little to cure the deficiencies of Awadallah.

Furthermore, Applicants respectfully contend that no where in Awadallah is satellite transmission or networks disclosed which are the primary thrust of Connors '267. Applicants take the position there is absolutely no suggestion, implication and certainly no motivation to combine Awadallah '251 which no where discusses satellite networks with the satellite network system taught in Connors '267 in the manner recited by the Examiner to reject the instant claims. Applicants respectfully contend that a person of ordinary skill in the art of dynamic resource allocation architecture for differentiated services over broadband communication networks, which are satellite based as in the instant application, would not be likely to search, consider or employ Awadallah which is not directed to satellite networks and does not employ the dynamic resource allocation system required in the claims of the instant invention and, further, one of ordinary skill in the art of the instant invention would not be motivated to consider or employ the DAMA channel resource metric as set out in Connors '267 which is directed to dequeuing input data from a DAMA channel buffer into the RA channel buffer according to a comparison between a predicted transmission delay and a delay threshold and transmitting the dequeued input data in the RA channel buffer via the RA resource units.

Therefore, Applicants respectfully disagree that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors so that a dynamic assignment/multiple access (DAMA) is provided to coordinate a transmission of data over the system. Applicants respectfully conclude that one would not have been motivated to do so to allow the DAMA channel buffer to accept the input data received at the first node for the reasons set out above which are hereby respectfully incorporated by reference.

The Examiner goes on to say as to claim 2, Awadallah teaches the dynamic resources allocation system recited in claim 1, however, Awadallah fails to teach the satellite is a non-processing satellite. However, the Examiner goes on to state that Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. Connors teaches the satellite is a non-processing satellite (col. 2, lines 62-64, Connors discloses in a satellite network 100, the AA 108 resides...at a terrestrial master control station...). The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors to have a non-processing satellite. The Examiner submits that one would have been motivated to do so to have the allocating agent (AA) resided at a terrestrial master control station.

Applicants respectfully disagree that Awadallah teaches the dynamic resources allocation system as recited in claim 1. The only mention of any language similar to this but non-analogous to the dynamic resource allocation system as defined in the instant claims is inter alia at col. 3, lines 41 et seq. wherein it is stated "protocols that dynamically select port numbers for their data streams"; col. 3, line 51 wherein it is stated "that dynamically select data exchange port numbers"; col. 4, lines 4 et seq. wherein it is stated "that employs dynamic port assignment"; col. 4, lines 65 et seq. wherein it is stated "the dynamic port numbers"; and col. 6, lines 39 et seq. wherein it is stated "audio, video, and data in the form of IP packets that use dynamic port numbers." Applicants respectfully contend that this is completely distinguishable from a dynamic resource allocation system that supports differentiated services with different levels of priority comprising an Internet protocol network that comprises a classifier for identifying specific type of messages and a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system as required in claim 1.

The Examiner goes on to say that Awadallah fails to teach the satellite is a non-processing satellite. Applicants respectfully contend that Awadallah no where teaches using a satellite or a satellite network to employ its system and general references as found in col. 7, lines 52 et seq. "the Corporate remote router controls the traffic from corporate LAN to branch office across a WAN link, which is typically the bottleneck in the corporate Intranet" and col. 8, lines 22 et seq. where it is stated "In any case, the underlying WAN link 218 is treated as if it simply were a transport media or pipe that is transparent to the QoS modules on both ends" no where teaches, suggests or implies the use of a satellite or satellite networks.

Applicants respectfully submit that Connors at col. 2, lines 62-4 discloses "In a satellite network 100, the AA 108 resides either at the satellite (denoted 108A) or at a terrestrial master control station (MCS) 106 (denoted 108B)." Applicants respectfully

submit that although the teaching at the recited passage indicates that the allocating agent (AA) 108 may reside either in the satellite or at a terrestrial station, this in and of itself does not define a non-processing satellite as required by claim 2. Applicants respectfully submit that Connors '267 is absolutely silent with regard to other processing assets that may be possessed by satellite 102 and certainly does not exclude same so that in Applicants' view 102 is not taught to be a non-processing satellite at the recited passage as relied upon by the Examiner.

Therefore, Applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors to have a non-processing satellite and one would not have been motivated to do so to have the allocated agent (AA) resided at a terrestrial master control station.

The Examiner submits as to claim 4, Awadallah teaches the dynamic resources allocation system recited in claim 1. However, Awadallah fails to teach the satellite is a processing satellite. The Examiner goes on to state, however, that Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. Further, the Examiner contends that Connors teaches the satellite is a processing satellite (at col. 2, lines 62-64, Connors discloses in a satellite network 100, the AA 108 resides.....at the satellite....).

The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors to have a processing satellite and one would be motivated to do so to have the allocating agent (AA) resided at the satellite.

Applicants respectfully submit that Awadallah fails to teach either the system of claim 1 of the instant invention or the use of the satellite for same for the reasons cited above which are hereby respectfully incorporated by reference. Further, Applicants respectfully submit that at col. 2, lines 62-64 of Connors the allocating agent 108 is taught to be either on the satellite or on a terrestrial master control station; however, Connors in no way cures the deficiencies of Awadallah for the reasons recited above which are hereby respectfully incorporated by reference.

Therefore, Applicants respectfully disagree that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors to have a processing satellite and that one would not have been motivated to do so to have the allocating agent residing at the satellite because of the non-analogous nature of each of the references and the lack of any suggestion, implication or motivation to combine them in the manner presented by the Examiner to reject the instant claims.

As to claim 5, the Examiner contends that Awadallah teaches the dynamic resources allocation system recited in claim 1 wherein the DAMA communication protocol

comprises an application detection algorithm (col. 3, lines 48-60, Awadallah discloses this packet mapper...monitors the port number negotiation and selection for those applications and protocols that dynamically select data exchange port numbers...intercepts those data packets with dynamic port numbers and performs port swapping before routing these packets to the next hop router).

Applicants respectfully submit that other than mentioning at said recited sections in col. 3, at line 51 "that dynamically select data exchange port numbers" as previously discussed, this recitation relied upon by the Examiner in no way teaches, suggests or implies the dynamic resources allocation system as recited in claim 1. Furthermore, claim 5 is distinguishable over Awadallah with regard to those distinctions drawn with regard to claim 1 which are hereby respectfully incorporated by reference.

The Examiner goes on to say as to claim 6, Awadallah teaches the dynamic resource allocation system recited in claim 1; however, Awadallah fails to teach the DAMA communication protocol comprises a resource requirement estimation algorithm that is based on queue statistics versus performance statistics. However, the Examiner contends that Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. Further, the Examiner contends that Connors teaches the DAMA communication protocol comprises a resource requirement estimation algorithm that is based on queue statistics versus performance statistics, directing Applicants' attention to col. 12, lines 1-6, Connors discloses the channel selection module...and the random access queue...to form delay estimates of the last packet in each queue.

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors to have an estimation algorithm based on queue statistics and that one would have been motivated to do so that data packet are removed from the front of the DAMA queue (DQ) and placed in the random access queue (RAQ).

Applicants respectfully submit that at col. 12, lines 1-6 of Connors there is disclosed "The channel selection module 810 uses the PFRM from the packet flow measurement module 804 and the size of the DAMA queue (DQ) in the DAMA channel buffer 810 and the random access queue (RAQ) in the RA channel buffer 818 to form delay estimates of the last packet in each queue." Applicants respectfully submit that as is seen at col. 12, lines 7 et seq. of Connors where it is stated "If it appears, using these delay estimates, that the packets in the DQ will see delays in excess of a threshold..." the primary concern and direction of this teaching is to deal with delay estimates and packet data transmission.

Applicants respectfully distinguish this from a resource requirement estimation algorithm that is based on queue statistics versus performance statistics which is not suggested or implied in said recitation of Connors. Furthermore, claim 6 is patentable over

both Awadallah and Connors for the patentable distinctions drawn with regard to claim 1 which are hereby respectfully incorporated by reference.

Applicants therefore respectfully disagree that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors to have an estimation algorithm based on queue statistic and respectfully disagree that one would have been motivated to do so that data packet are removed from the front of the DAMA queue (DQ) and placed in the random access queue (RAQ).

The Examiner goes on to say as to claim 7, Awadallah teaches the dynamic resource allocation system recited in claim 1; however, Awadallah fails to teach the DAMA communication protocol comprises a resource request that generates a resource request to set required resources.

However, the Examiner contends that Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. Further, the Examiner submits that Connors teaches the DAMA communication protocol comprises a resource request that generates a resource request to set required resources (col. 4, lines 45-49, Connors discloses the method comprises...transmitting a resource request having a resource metric from the first node to an allocation of resource units according to the resource metric).

The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors by introducing a DAMA protocol that comprises a resource request that generates a resource request to set required resources and one would have been motivated to do so to have a data storage device in the system tangibly embodying instructions.

Applicants respectfully submit that at Connors col. 4, lines 45 et seq. there is disclosed "The method comprises the steps of receiving input data at the first node, transmitting a resource request having a resource metric from the first node to an allocating agent, receiving an allocation of resource units according to the resource metric, the resource units comprising at least one DAMA channel resource metric and at least one RA channel resource unit, queuing the input data into the DAMA channel buffer, dequeuing input data from the DAMA channel buffer into the RA channel buffer according to a comparison between a predicted transmission delay and a delay threshold, and transmitting the dequeued input data in the RA channel buffer via the RA resource units."

Again, Applicants respectfully submit that it is not at all apparent that this recited passage suggests or implies a resource request that generates a resource request to set required resources as required by claim 7 since the recited passage relied upon by the Examiner appears to be directed to a comparison between a predicted transmission delay and a delay threshold as stated in the subsequent disclosure starting at line 54 of col. 4.

Furthermore, Applicants respectfully submit that claim 7 has been shown to be patentably distinguishable over either of Awadallah and Connors in any improper combination for the reasons cited above with regard to claim 1 which are hereby respectfully incorporated by reference.

Therefore, Applicants respectfully conclude that it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors by introducing a DAMA protocol that comprises a resource request that generates a resource request to set required resources and that one would not have been motivated to do so to have a data storage device in a system tangibly embodying instructions as contended by the Examiner.

The Examiner states as to claim 8, Awadallah teaches the dynamic resource allocation system recited in claim 1; however, Awadallah fails to teach the DAMA communication protocol comprises a resource request that sends raw queue statistics to the gateway to set required resources. However, reasons the Examiner, Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. The Examiner continues that Connors teaches the DAMA communication protocol comprises a resource request that sends raw queue statistics to the gateway to set required resources (col. 4, lines 60-67, Connors discloses the apparatus comprises...a DAMA channel buffer...the resource unit request module for generating a resource request metric when indicated by an information rate of the input data, and for receiving an allocation or resource units via a receiver...for dequeuing input data from the DAMA).

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors by introducing a DAMA protocol that comprise a resource request that sends raw queue statistics to the gateway to set required resources. According to the Examiner, one would have been motivated to do so to allow the request metric to be used with a channel that is both random access (RA) and DAMA.

Applicants respectfully submit that at col. 4, lines 60-67 there is stated "The apparatus comprises a receiver for receiving input data, a DAMA channel buffer for accepting the input data, a resource unit request module, operatively coupled to the transmitter and the receiver, the resource unit request module for generating a resource request metric when indicated by an information rate of the input data, and for receiving an allocation of resource units via the receiver, and a channel selection module, for dequeuing input data from the DAMA channel buffer to an RA channel buffer according to a predicted channel delay and a delay threshold."

Again, Applicants respectfully submit that this teaching does little to satisfy the requirement in claim 8 which requires a resource request that sends raw queue statistics to the gateway to set required resources. Applicants respectfully submit that this recitation and the DAMA channel buffer and RA channel are all directed to predicting channel delay and a delay threshold as can be seen at the top of col. 5, lines 1-2. Furthermore, Applicants respectfully contend that Awadallah is not properly combined with the non-analogous Connors reference for the reasons recited above which are hereby respectfully incorporated by reference and that claim 8 is patentably distinguishable over Awadallah and Connors in any combination for the reasons above recited which are hereby, again, respectfully incorporated by reference.

Applicants respectfully submit that it would not have been obvious for these reasons for one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors by introducing a DAMA protocol that comprises a resource request that sends raw queue statistics to the gateway to set required resources. Furthermore, Applicants respectfully submit that one would not have been motivated to do so to allow the request metric to be used with a channel as both random access (RA) and DAMA.

The Examiner goes on to say as to claim 10, Awadallah teaches the dynamic resource allocation system recited in claim 1; however, Awadallah fails to teach the gateway comprises an algorithm that accumulates all requests received at substantially the same time. The Examiner goes on to state that Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. The Examiner continues that Connors teaches the gateway comprises an algorithm that accumulates all requests received at the same time (col. 9, lines 58-62, Connors discloses the measured size of the received data packets is accumulated over time window T_c, as shown in 608, wherein the time window T_c is determined...).

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors by putting in the gateway an algorithm that accumulates all requests received at substantially the same time. According to the Examiner, one would have been motivated to do so to allow the new measured size of the received data packets accumulated over the time window T_c is used to compute the packet flow rate metric (PFRM).

Applicants respectfully submit that at col. 9, lines 58-62 of Connors there is disclosed "Then, the measured size of the received data packets is accumulated over time window T_c as shown in block 608, wherein the time window T_c is determined according to the principles described above." Applicants respectfully submit they are at a loss to discern how this teaches the requirement of claim 10 "wherein the gateway comprises an algorithm that accumulates all requests received at substantially the same time." Furthermore,

Applicants have recited the impropriety of combining Awadallah with Connors for reasons recited above which are hereby respectfully incorporated by reference and have demonstrated that claim 10 is patentably distinguishable over Awadallah and/or Connors for those reasons recited with regard to claim 1 which are hereby respectfully incorporated by reference.

Therefore, Applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors by putting in the gateway an algorithm that accumulates all requests received at the same time. Furthermore, one would not have been motivated to do so to allow the new measured size of the received data packets accumulated over the time window T_c is used to compute the packet flow rate metric (PFRM) as contended by the Examiner.

The Examiner goes on to state as to claim 11, Awadallah teaches the dynamic resource allocation system recited in claim 1 wherein the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon service classes and consumer profile for each current and previous request, directing Applicants' attention to Fig. 2.

Applicants respectfully submit that they are unable to discern as required by claim 11 a dynamic resource allocation system as recited in claim 1 wherein the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon services, classes and consumer profile for each current and previous requests as required by claim 11. Applicants respectfully submit this is not at all apparent from a study of Fig. 2 and, furthermore, respectfully submit that claim 11 is patentably distinguishable over Awadallah for the reasons cited above with regard to claim 1 which are hereby respectfully incorporated by reference.

The Examiner goes on to say as to claim 12, Awadallah teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises three modes, including fixed assignment, reservation assignment, and random assignment modes (col. 3, lines 37-45, Awadallah discloses existing network devices...allow administrator to pre-allocate or reserve a range of ports for certain priority levels...for their data streams, network devices cannot predict these dynamics port numbers and therefore cannot serve these data streams with priorities).

Applicants respectfully submit that at col. 3, lines 37-45 of Awadallah there is disclosed "Existing network devices, such as routers and switches (including legacy devices), allow administrators to pre-allocate or reserve a range of ports for certain priority levels. However, for those applications and protocols that dynamically select port numbers for their data streams, network devices cannot predict these dynamic port numbers and therefore cannot serve these data streams with priorities."

Applicants respectfully submit that they are unable to discern how this in any way teaches, suggests or implies the DAMA communication protocol comprising three modes, including fixed assignment, reservation assignment and random assignment modes as required by claim 12 and, furthermore, claim 12 is seen to be patentably distinguishable over Awadallah for the reasons cited above with regard to claim 1 which are hereby respectfully incorporated by reference.

The Examiner goes on to say as to claim 13, Awadallah teaches the dynamic resource allocation system recited in claim 12 wherein, in the fixed assignment mode, a certain amount of bandwidth is allocated for the highest priority users (col. 3, lines 48-53, Awadallah discloses...applications and protocols that dynamically select data exchange port numbers, maintains a proxy table that maps dynamic port numbers to reserved port numbers for high priority traffics).

Applicants respectfully submit that in Awadallah col. 3, lines 48-53 recited above there is no teaching, suggestion or implication that the dynamic resource allocation system recited in claim 12 wherein in the fixed assignment mode a certain amount of bandwidth is allocated for the highest priority users is either suggested, taught or implied. Furthermore, Applicants respectfully contend that claim 13 is patentably distinguishable over Awadallah for the reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

The Examiner goes on to state with regard to claim 14, Awadallah teaches the dynamic resource allocation system recited in claim 12 wherein, in the reserved assignment mode, reservation bandwidth is allocated for users to request their demand without knowledge of others request transmissions (col. 4, lines 14-19, Awadallah discloses...a network administrator reserves a range of high priority...without requiring any further changes to pre-existing applications and corporate networks).

Applicants respectfully submit that at col. 4, lines 14-19 there is disclosed "In such a system, once a network administrator reserves a range of high priority data ports, the QoS Proxy only needs to be added to the network edge device – the branch office router in this case – without requiring any further changes to pre-existing applications and corporate networks." Applicants respectfully submit that this does little to suggest, teach or imply the dynamic resource allocation system recited in claim 12 wherein in the reservation assignment mode reservation bandwidth is allocated for users to repeat their demand without knowledge of others request transmissions. "The branch office router in this case – without requiring any further changes to pre-existing applications and corporate networks" as set out in this recited passage, Applicants respectfully contend does little to teach demand without knowledge of others request transmissions as required by claim 14. Furthermore, Applicants respectfully submit that claim 14 has been seen to be patentably

distinguishable over Awadallah for the reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

The Examiner goes on the say with regard to claim 15, Awadallah teaches the dynamic resource allocation system recited in claim 12 wherein, in the random access mode, users transmit the data without making reservation (col. 7, lines 14-19, Awadallah discloses...unmapped outbound packets can still be assigned to their corresponding priority queues...packets of this session will not be treated with high priority in other routers since their port number is out of the reserved high priority port range).

Applicants respectfully submit that in Awadallah at col. 7, lines 14-19 there is stated "In such a case, unmapped outbound packets can still be assigned to their corresponding priority queues (since there is still bandwidth left for priority traffic) but packets of this session will not be treated with high priority in other routers since their port number is out of the reserved high priority port range." Again, Applicants respectfully submit that they are at a loss to discern how the recited passage in any way teaches, suggests or implies a dynamic resource allocation as set out in claim 12 wherein in the random access mode users transmit the data without making reservations. Applicants respectfully submit this function is conspicuously absent in the recited passage. Furthermore, Applicants respectfully contend that claim 15 is patentably distinguishable over Awadallah for the reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

The Examiner goes on to state as to claim 16, Awadallah teaches the dynamic resource allocation system recited in claim 1; however, Awadallah fails to teach the DAMA communication protocol comprises a collision resolution algorithm. However, the Examiner goes on to state, Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. Furthermore, the Examiner contends that Connors teaches the DAMA communication protocol comprises a collision resolution algorithm (col. 6, lines 34-38, Connors discloses packets use random access channel only during scene changes, collisions on the RA channel only occur if scene changes occurs simultaneously...).

The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors by adding the DAMA communication protocol with a collision resolution algorithm and one would have been motivated to do so to monitor the packet loss.

Applicants respectfully submit that at col. 6, lines 34-38 of Connors there is stated "Since packets use the random access channel only during scene changes, collisions on the RA channel only occur if scene changes occur simultaneously in independent uplink video sessions. Since this probability is relatively low, then packet loss rates are low as

"well." Applicants respectfully submit that the recitation that collisions on the RA channel only occur if scene changes occur simultaneously in independent uplink video sessions does not suggest, teach or imply the dynamic resource allocation system as recited in claim 1 where the DAMA communication protocol comprises a collision resolution algorithm. Applicants respectfully contend that a collision resolution algorithm as defined in Applicants' specification and claims is no where contemplated in this recited passage. Furthermore, Awadallah and Connors are not properly combinable for the reasons recited above with regard to claim 1 and claim 16 is seen to be patentably distinguishable over Awadallah and Connors for reasons recited above with regard to claim 1, all of which are respectfully incorporated by reference.

Applicants respectfully conclude that it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors by adding the DAMA communication protocol with a collision resolution algorithm. Furthermore, it is Applicants' position that one would not have been motivated either to combine these references as contemplated by the Examiner to monitor the packet loss or to combine these references, as suggested by the Examiner, for any reason, including for monitoring packet loss.

The Examiner goes on to state as to claim 17, Awadallah teaches the dynamic resource allocation system recited in claim 12; however, Awadallah fails to teach the boundary between the random access mode and the reservation mode is movable in order to reduce the number of collisions whenever there are more best effort users using the system. The Examiner goes on to state, however, that Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. The Examiner continues that Connors teaches the boundary between the random access mode and the reservation mode is movable in order to reduce the number of collisions whenever there are more best effort users using the system (col. 5, lines 6-11, Connors discloses since packets are moved from the DQ to RAQ on NL packet 1108 basis, random transmission patterns will remain unchanged until the entire NL packet 1108 has been transmitted. For light network loads, this amounts to a new slot pattern each TDMA frame 1104, minimizing the effort of possible collisions). The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors to have the reservation mode and the random access mode movable and one would have been motivated to do so to minimize the effort of possible collision.

Applicants respectfully submit that in Connors, col. 5, lines 6-11 it is stated "This request metric is used with a channel that is both random access (RA) and DAMA, and describes a MAC protocol which solves the delay/capacity trade-off by introducing slight

"packet loss that can be tolerated by most real-time multimedia applications (voice and video)." Applicants respectfully submit that this recitation at col. 5, lines 6-11 does not suggest, teach or imply any boundary, no less one that is between the random access mode and the reservation mode which is movable in order to reduce the number of collisions whenever there are more best effort users using the system as required by claim 17. Furthermore, for reasons recited above, Awadallah and Connors are not properly combinable as contended by the Examiner to reject claim 17 and, in addition, Applicants respectfully submit that claim 17 is patentably distinguishable over both Awadallah and Connors for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

Applicants, therefore, respectfully conclude that it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors to have the reservation mode and the random access mode movable and one would not have been motivated to combine these references in the manner suggested by the Examiner to minimize the effort of possible collision.

The Examiner states as to claim 18, Awadallah teaches the dynamic resource allocation system recited in claim 1; however, Awadallah fails to teach the DAMA communication protocol comprises a bandwidth request algorithm, a connection acceptance algorithm, a bandwidth usage detection algorithm, and a resource assignment algorithm. However, the Examiner states that Connors teaches a method and apparatus for medium access control from integrated services packet-switched satellite. According to the Examiner, Connors teaches the DAMA communication protocol comprises a bandwidth request algorithm, a connection acceptance algorithm, a bandwidth usage detection algorithm, and a resource assignment algorithm (Fig. 3). The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors to have a connection acceptance algorithm, a bandwidth usage detection algorithm, and a resource assignment algorithm and one would have been motivated to do so to decide for how much channel resources to allocate to each terminal using an allocation algorithm.

Applicants respectfully submit, after careful study of Fig. 3, that the dynamic resource allocation system as recited in claim 1 wherein the DAMA communication protocol comprises a bandwidth request algorithm, a connection acceptance algorithm, a bandwidth usage detection algorithm, and a resource assignment algorithm is no where to be taught, suggested or implied by elements 302, 304, 306, 308, 310 and 312 of Fig. 3 in Connors. Furthermore, Applicants respectfully submit that Awadallah and Connors are not properly combinable for reasons recited above to reject claim 18 and that claim 18 has been shown

to be patentably distinguishable over Awadallah and Connors for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

The Examiner has rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Awadallah in view of Connors, and further in view of Cousineau U. S. 6,400,706. The Examiner states that Awadallah teaches the invention as claimed including dynamic resource allocation architecture for differentiated services over broadband communication networks. The Examiner states as to claim 3, Connors teaches the dynamic resource allocation system recited in claim 2; however, Connors fails to teach that the non-processing satellite implements a bent pipe communication link between the local area network edge device and the gateway. The Examiner goes on to say, however, Cousineau teaches a system and method for re-synchronizing a phase-independent first-in first-out memory and that Cousineau teaches the non-processing satellite implements a bent pipe communications link between the local area network edge device and the gateway (col. 4, lines 52-56, Cousineau discloses...satellite...effectively functions as "bent pipe" repeaters. Each satellite...receives a communications traffic signal, such as a voice signal or a data signal, from either a communications device...or from a gateway...). The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors in view of Cousineau so that a bent pipe communication link between the local area network edge device and the gateway is established through the non-processing satellite and one would have been motivated to do so in order to use the satellite as a repeater.

Applicants respectfully submit that in Cousineau, col. 4, lines 52-56 there is disclosed "In a preferred embodiment, satellites 110, 112 effectively function as 'bent pipe' repeaters. Each satellite 110, 112 receives a communications traffic signal, such as a voice signal or a data signal, from either a communications device 102, 104 or from a gateway 106, 108."

Applicants respectfully disagree that the aforesaid recited passage contemplates a bent pipe communication link between the local area network edge device and the gateway as required in claim 3 of the instant claims. Furthermore, Applicants respectfully contend that Cousineau, like Connors, may not be properly combined with Awadallah for the reasons recited above with regard to claim 1 and furthermore Cousineau does little to cure the deficiencies of both Awadallah and Connors and Applicants respectfully contend that claim 3 is seen to be patentably distinguishable over Awadallah, Connors and Cousineau for the reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

Applicants respectfully conclude that it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Connors

and further in view of Cousineau so that a bent pipe communication link between the local area network edge device and the gateway is established through the non-processing satellite and furthermore that one would not have been motivated to do so in order to use the satellite as a repeater as contended by the Examiner.

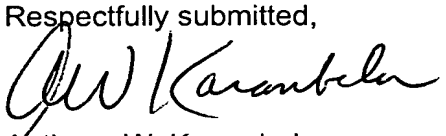
The Examiner has rejected claim 9 under 35 U.S.C. 103(a) as being unpatentable over Awadallah in view of Connors as applied to claim 1 above, and further in view of Maarten et al (ACM Digital Library). The Examiner states that Awadallah teaches the invention as claimed including dynamic resource allocation architecture for differentiated services over broadband communication networks. As to claim 9, the Examiner states, Awadallah teaches the dynamic resource allocation system recited in claim 1 and a gateway assigned resources; however, Awadallah fails to teach the DAMA communication protocol comprises a weighted fair queuing algorithm that performs a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources. The Examiner further reasons that Maarten teaches a weighted fair queuing algorithm (Fig. 1, page 34) and concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Awadallah in view of Maarten so that the system includes a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources. Furthermore, the Examiner concludes that one would have been motivated to do so to compute a quantile of the queuing delay.

Applicants respectfully submit that at Fig. 1, page 34 of Maarten et al, ACM Digital Library, a system is shown with queues for different applications. The classifier depicted reads the DiffServ code point in the IP header to determine whether the packet should be put in the voice or in another queue. Applicants respectfully contend that nothing in Fig. 1 of Maarten et al teaches, suggests or implies the DAMA communication protocol comprising a weighted fair queuing algorithm that performs a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources as required by claim 9. Furthermore, Awadallah may not be properly combined with Connors for reasons recited above with regard to claim 1; Maarten does little to cure the deficiencies of both Awadallah and Connors and Maarten is not properly combinable with either Awadallah or Connors since Maarten is primarily directed to differentiated services networks particularly in the context of IP telephony, whereas Awadallah is primarily directed to a packet mapper prioritizing streams of data packets in a computer network, and Connors is primarily directed to integrated services packet-switched satellite networks.

Applicants respectfully submit, in view of the above remarks and amendments, all the claims presently under prosecution have been shown to contain patentable subject matter and to be patentably distinguishable over the prior art of record.

Accordingly, Applicants respectfully request that this application be reviewed and reconsidered in view of the above remarks and that a Notice of Allowance be issued at an early date.

Respectfully submitted,



Anthony W. Karambelas
Registration No. 25,657

Karambelas & Associates
655 Deep Valley Drive, Suite 303
Rolling Hills Estates, CA 90274
Telephone: (310) 265-9565
Facsimile: (310) 265-9545